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AMENDMENT TO THE CLAIMS

1. (currently amended) A process of designing an optimal vibration mount for a ~~storage system~~disc drive comprising steps of:

- a) computing an external disturbance model for the ~~storage system~~disc drive;
- b) computing an internal disturbance model for the ~~storage system~~disc drive;
- c) defining an inertia matrix for the ~~storage system~~disc drive;
- d) defining a state estimator based on the inertia matrix and external and internal disturbance models to minimize a defined norm of a state estimation error;
- e) calculating the gain of the state estimator as a solution to a filter algebraic Riccati equation; and
- f) defining optimal mount damping and stiffness parameters based on the calculated state estimator gain.

2. (original) The process of claim 1, wherein step (e) includes,

- e1) calculating a covariance matrix based on the solution to the filter algebraic Riccati equation, and
- e2) calculating the state estimator gain based on the covariance matrix.

3. (original) The process of claim 1, wherein step (e) is performed by

- (e1) calculating a covariance matrix Σ from a solution of the filter algebraic Riccati equation in the form

$$\begin{pmatrix} 0 & I \\ 0 & 0 \end{pmatrix} \Sigma + \Sigma \begin{pmatrix} 0 & I \\ 0 & 0 \end{pmatrix}' + \begin{pmatrix} 0 & 0 \\ M^{-1} & \Xi \end{pmatrix} \begin{pmatrix} 0 & 0 \\ M^{-1} & \Xi \end{pmatrix}' - \Sigma \begin{pmatrix} 0 & I \end{pmatrix}' \Theta^{-1} \begin{pmatrix} 0 & I \end{pmatrix} \Sigma = 0,$$

where M is the inertia matrix, Θ is the internal disturbance matrix and Ξ is the external disturbance matrix, and

- (e2) calculating the state estimator gain H from $H = \Sigma \begin{pmatrix} I & 0 \end{pmatrix}' \Theta^{-1}$.

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4. (original) The process of claim 3, wherein step (f) is performed by

- f1) solving $H = \begin{pmatrix} M^{-1}B \\ M^{-1}K \end{pmatrix}$ for B and K, and
- f2) setting the optimal mount damping matrix to B and the optimal mount stiffness matrix to K.

5. (original) The process of claim 1 wherein the state estimator is a Kalman filter.

6. (original) The process of claim 5, wherein step e) includes,

- e1) calculating a covariance matrix based on the solution to the filter algebraic Riccati equation, and
- e2) calculating the Kalman filter gain based on the covariance matrix and the inertia matrix.

7. (original) The process of claim 6, wherein step (e) is performed by

- (e1) calculating a covariance matrix Σ from a solution of the filter algebraic Riccati equation in the form

$$\begin{pmatrix} 0 & I \\ 0 & 0 \end{pmatrix} \Sigma + \Sigma \begin{pmatrix} 0 & I \\ 0 & 0 \end{pmatrix}' + \begin{pmatrix} 0 \\ M^{-1} \end{pmatrix} \Xi \begin{pmatrix} 0 \\ M^{-1} \end{pmatrix}' - \Sigma \begin{pmatrix} 0 & I \end{pmatrix}' \Theta^{-1} \begin{pmatrix} 0 & I \end{pmatrix} \Sigma = 0,$$

where M is the inertia matrix, Θ is the internal disturbance matrix and Ξ is the external disturbance matrix, and

- (e2) calculating the Kalman filter gain H from $H = \Sigma \begin{pmatrix} I & 0 \end{pmatrix} \Theta^{-1}$.

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8. (original) The process of claim 7, wherein step (f) is performed by

- f1) solving $H = \begin{pmatrix} M^{-1} B \\ M^{-1} K \end{pmatrix}$ for B and K, and
- f2) setting the optimal mount damping matrix to B and the optimal mount stiffness matrix to K.